MATRIX OF PLANT COMMUNITY/ASSOCIATION TYPES BY STATE AND GLOBAL RANK AND OCCURRENCE BY BUREAU OF LAND MANAGEMENT RESOURCE AREA: WITH FORWARD EXPLAINING COMPILATION AND USE OF MATRIX

Stephen V. Cooper and Robert L. DeVelice Montana Natural Heritage Program 1515 East 6th Avenue, Helena, MT 59620

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ABSTRACT

Within the state of Montana at least 400 plant associations or plant community types have been catalogued. The Bureau of Land Management has vast acreages under its aegis; the various Resource Areas (R.A.) represented have widely varying climates, substrates and landscapes. Because community types are good biological integrators of the above listed variables, an easily comprehended measure of the differences and similarities between these areas can be appreciated from a matrix of community types by R.A. In addition this matrix can provide an easily accessible geographically keyed listing of communities critical to conservation measures.

FORWARD TO MATRIX OF PLANT COMMUNITIES/ASSOCIATIONS ON BUREAU of LAND MANAGEMENT HOLDINGS: BY CONSERVATION RANK AND RESOURCE AREA

To assess community type distribution by Bureau of Land Management Resource Area (R.A.) the initial approach was to query the Biological Conservation Database (BCD). This database, as currently constituted and maintained on MTNHP computer system, contains only high quality (near pristine, lightly grazed) representations of c.ts. Only 125 plots were found in database that actually were on BLM lands (0 on Garnet, 0 on Great Falls, 2 on Powder River, 3 on Big Dry, 5 on Judith, 13 on Billings, 14 on Headwaters, 16 on Valley, 20 on Havre, 26 on Phillips and Dillon). Another query of BCD with records for counties aggregated into Resource Areas (because Resource Areas is not a field that can be queried in BCD) yielded only an additional 28 plots. Counties with no, or very minimal BLM lands were not queried; see Table 3 (page vii for listing of counties queried and those with dual Resouce Area membership).

This meager total would not begin to reveal the diversity of c.ts. on BLM holdings so further inquiry was made. However, it cannot be stated unequivocally that the c.ts. cited for particular resource areas actually occur on BLM holdings. We have only surmised that c.ts. documented to be within the jurisdictional boundaries of particular R.As. occur in environments that would also be found on BLM lands.

We then mounted back-up discs of lower quality site records once purged from the BCD system and derived locations for an additional 234 types.

A manual search then ensued which involved the perusal of the scientific literature and field and clearance reports that BCD indicated had been an original source of community description. This was complemented by a scan of the Montana Riparian Association stream reach inventory reports to the BLM (and other agencies with holdings proximal to those of the BLM). A scan of these inventory reports for stream reaches was deemed more efficient and more inclusive as much more acreage was evaluated than was covered when field plots were established (during sampling for ad database on which to construct a wetlands classification.

There are a number of types listed for which we have no plot documentation at this time; such would be the case for several riparian/wetland types named by the Montana Riparian Association in the course of inventorying Bureau of Land Management lands as per contractual stipulations. Other community types have been described by well-known ecologists (e.g. W. Mueggler and W.

Stewart) but no sample plots exit to document the existence of the type; these community types have been entered into our database on the strength of the observers' reputations in ecological matters. Still other community type information remains only on field forms and is yet to receive comprehensive analysis, but again based on the excellent reputations of investigators (such as R. DeVelice and P. Lesica) the preliminary community type designations based on these not yet analyzed field records have been incorporated into this matrix. Note that c.ts. derived from incompletely analyzed data tend to be grouped in the last portion of the matrix labeled "OTHER."

The 19 page table that precedes the c.t./rank by R.A. matrix is an alphabetical listing of community types and UNESCO structural types (a hierarchical classification of vegetation types) and is meant as a convenience for entering the matrix. Following c.t. name is the page number of matrix on which particular c.ts./structural types occur and the BCD source of the most definitive information on that vegetation type (UNESCO structural types do not have citations!).

The c.t./rank by R.A. matrix is organized by the UNESCO structural/physiognomic system so as to confer some ecological meaning to the whole. The UNESCO system is composed of four levels (Class, Subclass, Group, Formation). Headings of important group separations, which are in bold typeface, proceed from environments dominated by macrophytes (trees) to progressively reduced lifeform and more sparse vegetation types, or at least those of rather restricted environments (alpine rockfields, aquatic substrates). Thus, all c.ts. recognized as mid-grass prairie (dominated by species of Agropyron, Stipa, Poa etc.) occur together, as well as their subdivision into mid-grass types with and without a significant representation of a shrub component. Within a UNESCO structural unit the vegetation types are arranged alphabetically by Alliance and plant association, which are the finest levels of the classification and floristically defined.

Regarding the state and global ranking, note that only vegetation types which are known or presumed to be represented on BLM lands have their rankings reported. The lack of state or global rank signals that either that type does not occur on BLM lands or that we lack sufficient information to make the call. The rankings are estimates of the state and global rarity, respectively, for that type. These ranking have been determined by MTNHP staff in coordination with The Nature Conservancy and professional ecologists in Montana.

The shading of rows indicates that the state ranking is numerically 3 or less; this shading is intended as a conveniece for spotting types potentially at risk. Note that some community

types have a question mark for rank; this indicates that that these types are relatively new and have no ranking to date and/or that their extent/ubiquity is simply unknown. Table 1 (page vi) presents a matrix used by Natural Heritage Programs and which roughly details how rankings are determined with respect to occurrence and areal extent. A ranking of 3 indicates communities currently with a healthy status but with some negative impact could become imperiled. Communities with rank of 3 or less are those that should be tracked in any conservation program.

The cells of the matrix (occurrence of c.t./p.a. by R.A.) are either left blank (underline character holding position), indicating either no information or lack of occurrence, or contain one of three symbols. Sindicates that a sample (plot) or inventory sighting has been taken within the particular R.A. for the indicated vegetation type; it does not imply that the sample had been taken on BLM lands. The symbol P stands for probable occurrence within R.A. based on presence of that c.t. in an adjacent R.A. and the fact that this adjacent R.A. has substrates/environments inferred to be like those of the R.A. supporting the c.t. The H stands for hypothetical, a degree more uncertain than P; we suspect the c.t. could exist there based on putative species distribution. The P and H designations are just educated guesses of experienced ecologists.

Table 2 (page vii) is a synopsis of state rankings (numerical values 3 and less) by Resource Area and total number of community types by Resource Area. Note that only cells with S values (see below) and with both S and P values have been tabulated so a comparison can be made between actual and hypothesized occurrences.

The compilation that follows (beginning on page ix) is an alphabetical listing by scientific name (latin binomials) of all plant communities (C.T.), associations (P.A.) and habitat types (H.Ts.) listed for Montana by the Montana Natural Heritage Program. This listing has been updated and is considered allinclusive as of 12/1994.

Table 1. Matrix used as guide in estimation of state community type ranking. A combination of estimated total area occupied and estimated number of occurrences is used to define ranges for specific S-rankings (cells of table). Rankings in parenthesis are values that can be given when a community is at extremes of the cell's parameters.

Nu	timated mber of currences		0		3-15 mi. ² 2,000 to	(mi ² , acres) 15-75 mi. ² 10,000 to 50,000 ac.	>75 mi. ² >50,000
	0	SH,	SX	-	-	-	
A	1-5		-	S1	S1	S1	S1
В	6-20			S1	S2(S1)	S2(S1)	S2 (S1)
С	21-100		-	S1	S2 (S1)	S3 (S2)	S3 (S2)
D	100+		-	S1	S2(S1)	\$3 (\$2)	S5(S3,S4)

Table 2. Occurrence (presence/absence) of community/association types with State Rank of 3 and less as well as total number of types, both sampled and sampled plus probable (P) tabulated by Bureau of Land Management District and Resource Area (R.A.)

State Rank Dist.	But	te D	istrict	L	ewist	own D	. N	Miles City				
	GR	DL	HW	l GF	Resou: HV	rce A: JD	reas. PH	 VY		BS	BD	PR
1	0	0	. 0	0	1	0	1	0		1	1	1
2	4	10	3	0	4	3	0	4		6	3	. 4
3 Total # c.ts.	16	47	19	17	14	14	19	11		29	9	25
Rank <, = 3	20	57	22	17	19	17	20	15		36	13	30
Total # c.ts. sampled in R.A.	58	135	72	93	55	64	56	40		96	37	72
% of c.ts. with rank of 3 or less	34	42	30	18	34	26	36 ~	37		37	35	42
Total # c.ts. S and P	77	163	104	106	71	87	65	46		131	57	74

Table 3. Listing of Montana counties by Bureau of Land Management Resource Area (counties occurring in multiple Resource Areas are in bold; counties with shading have no or very minimal BLM holding and were not specified for search when databases were queried)

GARNET RESOURCE AREA COUNTIES:

1. LINCOLN, 2. FLATHEAD, 3. SANDERS, 4. LAKE, 5. MINERAL, 6. MISSOULA,

7. POWELL, 8. RAVALLI, 9. GRANITE

DILLON RESOURCE AREA COUNTIES:

10. BEAVERHEAD, 11. MADISON

HEADWATERS RESOURCE AREA COUNTIES:

12. SILVERBOW, 13. DEER LODGE, 14. JEFFERSON, 15. CLARK, 16. PARK, 17. BROADWATER, 18. GALLATIN

24. LEWIS & CLARK

GREAT FALLS RESOURCE AREA COUNTIES:

19. GLACIER, 20. TOOLE, 21. LIBERTY, 22. PONDERA, 23. TETON, 24. LEWIS

& CLARK, 25. CASCADE, 26. MEAGHER, 27. CHOUTEAU

JUDITH RESOURCE AREA COUNTIES:

28. JUDITH BASIN, 29. FERGUS, 30. PETROLEUM, 31. GOLDEN VALLEY, 27. CHOTEAU

HAVRE RESOURCE AREA COUNTIES:

32. HILL, 33. BLAINE

PHILLIPS RESOURCE AREA COUNTIES:

34. PHILLIPS

VALLEY RESOURCE AREA COUNTIES:

35. VALLEY

BIG DRY RESOURCE AREA COUNTIES:

36. DANIELS, 37. SHERIDAN, 38. ROOSEVELT, 39. McCONE, 40. RICHLAND, 41. DAWSON, 42. WIBAUX, 43. GARFIELD, 44. FALLON, 45. PRAIRIE, 35. VALLEY,

47. ROSEBUD, 48. CUSTER

POWDER RIVER RESOURCE AREA COUNTIES:

46. TREASURE, 47. ROSEBUD, 48. CUSTER, 49. CARTER, 50. POWDER RIVER

BILLINGS RESOURCE AREA COUNTIES:

51. SWEETGRASS, 52. WHEATLAND, 53. GOLDEN VALLEY, 54. MUSSELSHELL, 55. STILLWATER, 56. YELLOWSTONE 57. CARBON, 58. BIG HORN

National Park, Montana

ABIES LASIOCARPA/XEROPHYLLUM TENAX PA

ACER GLABRUM AVALANCHE CHUTE C.T.

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Page # for	Community Type	on Rank/RA Matrix
	Plant Community (CI) / Association (PA) Name	Alphabetically Arranged, Includes UNESCO Designations

on Rank/RA Matrix Primary Source for CI/PA Designation

ACER GLABRUM DECID, SCRUB SERIES ACER GLABRUM DRAINAGE BOTTOM C.T.	6 SCOM,	7, K.L. & L.D. CULWELL. 1986. Vegetation inventory of the Mill
ACER NEGUNDO ALLUVIAL DECID. FOR. SERIES ACER NEGUNDO WOODLAND SERIES ACER NEGUNDO/PRUNUS VIRGINIANA PA AGROPYRON DASYSTACHYUM/PHACELIA HASTATA C.I.	6 Gulc 6 7 HANS 16 Person	Extension Area, Little Rocky Mountains, Montana. P., K. BOGGS, R. PFISTER & J. JOY. 1991.
AGROPYRON SMITHII MID STEPPE SERIES AGROPYRON SMITHII PA		Beaverhead, Silver Bow & Madison Counties, MT. HANSEN. P., K. ROGGS. P. DEISTEP & 1 100 1001
AGROPYRON SMITHII/BOUTELOUA GRACILIS C.T.	16 Culk	Culwell, L.D. & K.L. Scow. 1982a. Terrestrial vegetation inventory: Dominy project area, Custer Co., MI., 1979-1980.
AGROPYRON SMITHII/CAREX FILIFOLIA H.T.	16 HANS	HANSEN, P.L. 1985. An ecological study of the vegetation of the Grand River/Cedar River, Sioux, and Ashland districts of the Custer National
AGROPYRON SMITHII/POA JUNCIFOLIA P.A. AGROPYRON SMITHII-STIPA VIRIDULA P.A.	20 LESI 16 DeVe	rorest. LESICA, P., Personal communication to R. DeVelice DeVelice, R.L, J. Lichthardt & P. Bourgeron. 1991. A preliminarv
AGROPYRON SPICATUM MID STEPPE SERIES AGROPYRON SPICATUM/AGROPYRON SMITHII H.T.	clas 16 16 MUEG	classification of the plant communities of northeastern Montana. MUEGGLER, W.F. & W.F. STEWART 1980. Graceland and christians howisters
AGROPYRON SPICATUM/BOUTELOUA CURTIPENDULA H.T.	type 16 HANS	types of western Montana. HANSEN, P.L. 1985. An ecological study of the vegetation of the Grand
AGROPYRON SPICATUM/BOUTELOUA GRACILIS H.T.	Forest. MUEGGLEI	River/Ledar Kiver, Sloux, and Ashland districts of the Custer National Forest. MUEGGLER, W.F. & W.F. STEWART. 1980. Grassland and shrubland habitat
AGROPYRON SPICATUM/CAREX FILIFOLIA H.T.	type 16 HANS Rive	types of western Montana. HANSEN, P.L. 1985. An ecological study of the vegetation of the Grand River/Cedar River, Sioux, and Ashland districts of the Custer National
AGROPYRON SPICATUM/CUSHION PLANT C.T.	Forest.	Forest. DeVelice, R.L. & P. Lesica. 1993. Plant community classification for
AGROPYRON SPICATUM/ERIOGONUM OVALIFOLIUM PA	16 P. L. Miss	bum tands, Pryor Mountains, Carbon Co., MT P. Lesica, from Hot Springs vicinity; J. Pierce, from Mt. Jumbo e. of Missonia
AGROPYRON SPICATUM/KOELERIA CRISTATA C.T.	16 Ross	nissoura Soss, R.L., E.P. Murray & J.G. Haigh. 1973. Soil and vegetation of near-pristing sites, Montana
AGROPYRON SPICATUM/MUHLENBERGIA CUSPIDATA C.T.	16 Prod	Prodgers, R. 1978. Circle West (McCone Co.) vegetation baseline study:
AGROPYRON SPICATUM/ORYZOPSIS HYMENOIDES PA		DeVelice, R.L. & P. Lesica. 1993. Plant community classification for vegetation on BLM lands, Pryor Mountains, Carbon County, Montana
AGROPYRON SPICATUM/POA SANDBERGII HT	21 16 MUEGI	WUEGGLER, W.F. & W.F. STEWART. 1980. Grassland and shrubland habitat
AGROPYRON SPICATUM-STIPA COMATA P.A. AGROSTIS STOLONIFERA CT ALNUS INCANA CT	Cyper 16 MTNH 16 HANSI 9 HANSI	types of western Montana. MTNHP (Unpublished Information) HANSEN, P., K. BOGGS, R. PFISTER & J. JOY. 1991. HANSEN, P., K. BOGGS, R. PFISTER & J. JOY. 1991.

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ALNUS INCANA DECID. SCRUB SERIES ALNUS INCANA/CALAMAGROSTIS CANADENSIS PA ALNUS SINUATA CT ALNUS SPP AVALANCHE CHUTE CT ALNUS SPP DECID. SCRUB SERIES ALPINE (OR SUBNIVIAN) MAT-PATCHES ALPINE ROCK SERIES AMELANCHIER ALNIFOLIA DECID. SCRUB SERIES AMELANCHIER ALNIFOLIA/AGROPYRON SPICATUM C.T.	ANDROPOGON GERARDII TALL STEPPE SERIES ANDROPOGON GERARDII/ANDROPOGON SCOPARIUS C.T. ANDROPOGON GERARDII/CALAMOVILFA LONGIFOLIA C.T.	ANDROPOGON GERARDII/FESTUCA IDAHOENSIS C.T. ANDROPOGON HALLII TALL STEPPE SERIES ANDROPOGON HALLII/CAREX HELIOPHILA C.T.	ANDROPOGON HALLII/STIPA COMATA C.T. ANDROPOGON SCOPARIUS MID STEPPE SERIES	ANDROPOGON SCOPARIUS/CAREX FILIFOLIA H.T. ANDROPOGON SCOPARIUS/CAREX HELIOPHILA C.T. ANDROPOGON SCOPARIUS/MUHLENBERGIA CUSPIDATA PA	AQUATIC PLANT FORMATIONS ARTEMISIA ARBUSCULA MID STEPPE SERIES ARTEMISIA ARBUSCULA/AGROPYRON SPICATUM H.T. ARTEMISIA ARBUSCULA/FESTUCA IDAHOENSIS H.T. ARTEMISIA CANA EVERGREN SCRIB SERIES	

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ARTEMISIA CANA/STIPA COMATA PA	14 DeVelice	DeVelice. R.I. J. Lichthardt & D. Rourganon 1004 A profit-
ARTEMISIA LONGIFOLIA CI		classification of the plant communities of northeastern Montana.
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LONGIFOLIA PA		MINHP (Unnuhlished Information)
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ARTEMISIA LONGILOBA MID STEPPE SERIES		classification of the plant communities of northeastern Montana.
ARTEMISIA LONGILOBA/FESTUCA IDAHOENSIS HT	15 MUEGGLER,	R, W.F. & W.F. STEWART. 1980. Grassland and shrubland habitat
ARTEMISIA NOVA MID STEPPE SERIES		types of western Montana.
ARTEMISIA NOVA/AGROPYRON SPICATUM HT	15 MUEGGLER,	R, W.F. & W.F. STEWART. 1980. Grassland and shrubland habitat
ARTEMISIA NOVA/FESTUCA IDAHOENSIS HT	types of w 15 MUEGGLER,	types of western Montana. WUEGGLER, W.F. & W.F. STEWART. 1980. Grassland and shrubland habitat
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ARTEMISIA PEDATIFIDA XERIC DWARF SCRUB SERIES	<u>. 2</u>	
ARTEMISIA PEDATIFIDA-ATRIPLEX NUTTALLII C.T.	13 DeVelice,	e, R.L. & P. Lesica. 1993. Plant community classification for
ARTEMISIA DEDATITIDA (ASDONADA) SECATURA		Pryor Mountains, Carbon County, Montana.
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		vegetation on BLM tands, Pryor Mountains, Carbon County, Montana
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ARTEMISIA TRIDENTATA-ATRIPLEX NUTTALLII C.T.	classifi 12 DeVelice	classification of the plant communities of northeastern Montana. DeVelice, R.L. & P. Lesica. 1993. Plant community classification for
ARTEMISIA TRIDENTATA/AGROPYRON DASYSTACHYUM PA	Pryor Mo 9 JORGENSE	Vellow Dater Injury
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	Forest.	•
ARTEMISIA TRIDENTATA/AGROPYRON SPICATUM HT	9 MUEGGLER	MUEGGLER, W.F. & W.L. STEWART. 1980. Grassland and shrubland habitat
ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS HT	types of	types of western Montana. MJEGGLER, W.F. & W.L. STEWART. 1980. Grassland and shrubland habitat
ARTEMISIA TRIDENTATA/FESTUCA SCABRELLA HT	types of 15 MUEGGLER	types of western Montana. MUEGGLER, W.F. & W.L. STEWART. 1980. Grassland and shruhland habitat
	types of	types of western Montana.

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ARTEMISIA TRIDENTATA/STIPA COMATA C.T.	ARTEMISIA KIPAKITIA MID SIEPPE SEKLES ARTEMISIA TRIPARTITA/FESTUCA IDAHOENSIS			ATRIPLEX NUTTALLII/AGROPYRON SMITHII P.A. ATRIPLEX NUTTALLII-ARTEMISIA SPINESCENS C.T.	ATRIPLEX NUTTALLII/MONOLEPSIS NUTTALLIANA C.T.	ATRIPLEX NUTTALLII/ORYZOPSIS HYMENOIDES P.A.	BETULA GLANDULOSA DECID. SCRUB SERIES RETILIA GLANDIII OSA / CADEY DOSTDATA U T		BETULA OCCIDENTALIS/POTENTILLA FRUTICOSA P.A.	BETULA PAPYRIFERA C.T. RETII A DADVOTEDA MONTANE DECID. COD. CENTES	BOUTELOUA GRACILIS SHORT STEPPE BROAD-LEAVED DECIDIOUS WOOD! ANDS	CALAMAGROSTIS CANADENSIS PA CALAMAGROSTIS CANADENSIS TALL STEPPE SERIES	CALAMOVILFA LONGIFOLIA TALL STEPPE SERIES CALAMOVILFA LONGIFOLIA/AGROPYRON SMITHII C.T.	CALAMOVILFA LONGIFOLIA/ANDROPOGON HALLII PA	CALAMOVILFA LONGIFULIA/CAREX FILIFOLIA C.T.	CAREX APERTA PA		CAREX BUXBAUMII P.A. CAREX BUXBAUMII SWAMP SERIES CAREX ELYNOIDES ALPINE MEADOW SERIES	EE INOIDES

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17 BAMBERG, S.A. 1961. Plant ecology of alpine tundra areas in Montana and adjacent Wyoming. 19	17 19 HANSEN, P., K. BOGGS, R. PFISTER & J. JOY. 1991. 19	19 HANSEN, P., K. BOGGS, R. PFISTER & J. JOY. 1991. 19 19		alpine vegetation on Beaverhead National Forest, MT. 19 HANSEN, P., K. BOGGS, R. PFISTER & J. JOY. 1991. 19		20 PIERCE, J.R. 1986. Wetland community types of west-central Montana.		alpine vegetation on Beaverhead National Forest, MI. 18 Cooper, S.V. & P. Lesica. 1992. Plant community classification for	alpine vegetation on Beaverhead HANSEN, P., K. BOGGS, R. PFISTER	20 Cooper, S.V. & P. Lesica. 1992. Plant community classification for	alpine , HANSEN,		17 12 Cooper, S.V. & P. Lesica. 1992. Plant community classification for	alpine vegetation on Beaverhead National Forest, MT. 12 navolice of the forest of the	classification of the plant communities of northeastern Montana.		lypes of western Montana. 10 DeVelice, R.L. 1992. Classification of plant communities of		
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PINUS CONTORTA FOREST SERIES	•	contiguous portions of Montana and Idaho.
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TURSAITA TRIDENTATA DECID. SCRUB SERIES 15 PURSHIA TRIDENTATA MID STEPPE SERIES 15 MUEGGLER, W.F. & W.L. STEWART. 1980. Grassland and shrubland habitat

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Page # for Community Type on Rank/RA Matrix Primary Source for CT/PA Designation

> Plant Community (CT) / Association (PA) Name Alphabetically Arranged, Includes UNESCO Designations

MUEGGLER, W.F. & W.L. STEWART. 1980. Grassland and shrubland habitat types of western Montana. MUEGGLER, W.F. & W.L. STEWART. 1980. Grassland and shrubland habitat types of western Montana.	- 8 9,	Forest. MUEGGLER, W.F. & W.L. STEWART. 1980. Grassland and shrubland habitat types of western Montana.	HANSEN, P., K. BOGGS, R. PFISTER & J. JOY. 1991. HANSEN, P., K. BOGGS, R. PFISTER & J. JOY. 1991. HANSEN, P., K. BOGGS, R. PFISTER & J. JOY. 1991.	S.V. & P. Lesica. /egetation on Beav P., K. BOGGS, R. P., K. BOGGS, R.	., ., ., ., ., ., ., ., ., ., ., ., ., .	P., K. BOGGS, R. PFISTER & J. JOY. Impublished Information) P., K. BOGGS, R. PFISTER & J. JOY. S.V. & P. Lesica. 1992. Plant commuegetation on Beaverhead National Formation K. BOGGS, R. PFISTER & J. JOY.	HANSEN, P., K. BOGGS, R. PFISTER & J. JOY. 1991. HANSEN, P., K. BOGGS, R. PFISTER & J. JOY. 1991.
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Page # for Community Type <u>on Rank/RA Matrix Primary Source for CI/PA Designation</u>

> Plant Community (CT) / Association (PA) Name <u>Alphabetically Arranged, Includes UNESCO Designations</u>

		Culwell, L.D. & K.L. Scow. 1982a. Terrestrial vegetation inventory: Dominy project area, Custer Co., Montana, 1979-1980. Culwell, L.D. & K.L. Scow. 1982a. Jappaetrial vortation:	Dominy project area, HANSEN, P., K. BOGGS, DeVelice, R.L. & P. I		types of western Montana. MUEGGLER, W.F. & W.L. STEWART. 1980.	Lypes or western montana. HANSEN, P.L. 1985. An ecological study of the vegetation of the Grand River/Cedar River. Sioux. and Ashland districts of the Custon Matismal	Forest. HANSEN, P.L. 1985. River/Cedar River,	HANSEN, P., K. BOGG	Scow, K.L., L.D. Culwell & L.A. Larsen. 1987. Vegetation inventory of the Rock Creek study area, Sanders County, Montana. HANSEN, P., K. BOGGS. R. PFISTER & J. JOY 1001
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MONTANA NATURAL HERITAGE PROGRAM State/Global Plant Communities/Associations Ranking for Bureau of Land Management

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Resource Area Codes: GR=Garnet, DL=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River Occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; __, no sample record and unlikely to occur based on environmental parameters

State/Global Plant Communities/Associations Ranking for Bureau of Land Management MONTANA NATURAL HERITAGE PROGRAM

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Resource Area Codes: GR=Garnet, DL=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, — — PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River Occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; —, no sample record and unlikely to occur based on environmental parameters

MONTANA NATURAL HERITAGE PROGRAM State/Global Plant Communities/Associations Ranking for Bureau of Land Management

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© Occurrence'Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; __, no sample record and unlikely to occur based on environmental parameters

State/Global Plant Communities/Associations Ranking for Bureau of Land Management MONTANA NATURAL HERITAGE PROGRAM

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UNESCO	C2A2ABA///	C2A2ABABAO C2A2ABABDO	C2A2ABABMO C2A2ABABNO	C2A2ABAAMO C2A2ABACAO C2A2ACA///	C2A2ACABAO C2A2ADA///	C2A2ADABAO C2A2ADABMO	C2A2ADACA0 C2A2ADACM0	C2A2ADADAO	CZAZADADGO CZAZAEA///	C2A2AEABAO C2A2AEACAO	C2A2AEADAO C2A2AEADMO	C2A2AEAEAO C2A2AEAFAO C2A2AEAGAO		CZAZVVA/// CZAZBBABAO CZAZBBABFO	C2A2BBABHO C2A2BBABMO	* Resource

Resource Area Codes: GR=Garnet, DI=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VX=Valley, BS=Billings, BD=Big Dry, PR=Powder River
Occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; ___, no sample record and unlikely to occur based on environmental parameters

MONTANA NATURAL HERITAGE PROGRAM State/Global Plant Communities/Associations Ranking for Bureau of Land Management

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BLM District Lewistown Miles City Resource Area GF HV JD PH VY BS BD PR	G 1 1 1 G H I I I S I I I I I I I I I I I I I I I I I I I I		S S S S S S S S S S S S S S S S S S S		
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Ran	- 4 4 0/ W W 4	· m	3, d	400 0	Wallwu4th
Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform) Mainly evergreen coniferous wooodlands with needle-leaved trees having conical growns (cont.)	PSEUDOTSUGA MENZIESII/FESTUCA IDAHOENSIS PA P. MENZIESII/FESTUCA SCABRELLA PA P. MENZIESII-JUNIPERUS OSTEOSPERMA CT P. MENZIESII/JUNIPERUS SCOPULORUM PA P. MENZIESII/PURSHIA TRIDENTATA PA P. MENZIESII-P. FLEXILIS/L. KINGII CT (now PI Broad-leaved, mainly cold-deciduous woodlan	/ ACER NEGUNDO WOODLAND SERIES / FRAXINUS PENNSYLVANICA WOODLAND SERIES 5 FRAXINUS PENNSYLVANICA/PRUNUS VIRGINIANA PA / POPULUS DELTOIDES WOODLAND SERIES / POPULUS TRICHOCARPA WOODLAND SERIES / SALIX AMYGDELOIDES WOODLAND SERIES	SALLIN MANGDALOIDES CY Mainly cold-deciduous forest needle-leaved trees and/or s LARIX LYALLII MIXED FOREST S	L. LYALLII-ABIES LASIOCARPI POPULUS ANGUSTIFOLIA MIXED POPULUS DELTOIDES MIXED FOR POPULUS TREMULOIDES MIXED I POPULUS TRICHOCARPA SERIES MONTANE OF BOTENI COld-deci	
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* Resource Area Codes: GR=Garnet, DI=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River

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State/Global Plant Communities/Associations Ranking for Bureau of Land Management MONTANA NATURAL HERITAGE PROGRAM

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Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform)		POPULUS TREMULOIDES/HERACLEUM SPON	P. TRENCHOLDES/OSMORHIZA OCCIDE	NO F. IKEMULOIDES/FOA PRATENSIS CT NO P. TREMULOIDES/PRUNUS VIRGINIANA CT	<u>д</u>			Subalpine or subpolar cold-deci	// LARIX LYALLII SUBALPINE DECIDUOUS FOREST SERIES	Montane or bo	s, ariuvi n trees	-	A. NEGUNDO/PRUNUS VIRGINIANA PA	FRAALINGS FEINISTLVAINICA ALLUVIAL DECID. FOR, SERI	POPULUS ANGUSTIFOLIA ALLUVIAL DECID. FOR SERVES	P. ANGUSTIFOLIA/CORNUS STOLONIFERA CT	P. ANGUSTIFOLIA/HERBACEOUS CT	P. ANGUSTIPOLIA/POA PRATENSIS CT	P. ANGUSTIFULIA/RECENT ALLUVIAL BAR CT	/ FOFULOS DELICIDES ALLOVIAL DECIDOOUS FOREST SERIE 10 P. DELTOIDES/CORNUS STOLONIFERA CT	ъ Д	다 다 다		
UNESCO Code		C1B3BCADA0	C1B3BCAEAO	C1B3BCAEAO	C1B3BCAFA0	C1B3BCAGA0 C1B3BCAHA0	CIBSBCATAO		C1B3CBA///			C1B3DBA/	C1B3DBABA0	C1B3DCB///	C1B3DDA//	CIB3DDACA0	CIB3DDACCO	CIBSDDADAO	CIBSDDAFA	C1B3DEABA0	C1B3DEABD0	C1B3DEACA0	C1B3DEAKA0	

Resource Area Codes: GR=Garnet, DI=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River Occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; __, no sample record and unlikely to occur based on environmental parameters

MONTANA NATURAL HERITAGE PROGRAM State/Global Plant Communities/Associations Ranking for Bureau of Land Management

Minimum # plots 75 0? 21 11 12						
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Ranking S G		й и и и и и и	<u>(i)</u> 4	1 C+ A	1 C	
Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform)	Montane or boreal cold-deciduous, alluvial forests mostly lacking evergreen trees (cont.)	C1B3DFMCA0 P. TREMULOIDES/CORNUS STOLONIFERA C1B3DFA/// POPULUS TRICHOCARPA ALLUVIAL DECIDUOUS FOR.SERIES	CIB3DFABAO P. TRICHOCARPA-BETULA PAPYRIFERA CT CIB3DFACAO P. TRICHOCARPA/CORNUS STOLONIFERA CT	C1B3DFACCO P. TRICHOCARPA/HERBACEOUS CT (same as following type) C1B3DFADAO P. TRICHOCARPA/POA PRATENSIS CT (old name)	C1B3DFADDO P. TRICHOCARPA/RECENT ALLUVIAL BAR CT	
UNESCO	CÍB3D(C1B3D C1B3D	CIB3D. CIB3D	C1B3D C1B3D	C1B3D]	

Resource Area Codes: GR=Garnet, DI=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River Occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; __, no sample record and unlikely to occur based on environmental parameters

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Plant Community or Associat (arranged by UNESCO lifeform of stature, then alphabetically winedlands or thickets of mainly needle-leaved dominants	ABI ABI Shr mic	A. A. A. A. JUN	J. OSTEOSPERMA/AGROPYRON SPICATUM PA J. OSTEOSPERMA/ARTEMISIA TRIDENTATA CT J. OSTEOSPERMA-CERCOCARPUS LEDIFOLIUS Mainly cold-deciduous shrublands or th temperate regions	.00\0\	ALNUS INCANA CT ALNUS INCANA/CALAMAGROSTIS CA ALNUS SINUATA CT AMELANCHIER ALNIFOLIA DECIDUO A. ALNIFOLIA/AGROPYRON SPICAT
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^{*} Resource Area Codes: GR=Garnet, DL=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; __, no sample record, unlikely to occur based on environmental parameters

IRAM	or Bureau of Land Management	BI.M District	List District
MONTANA NATURAL HERITAGE PROGRAM	al Plant Com	Plant Community or Association Name Ranking	

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Scare/Global Flant Communities/Associations Ranking Plant Community or Association Name	m of	stature, then alphabetically within lifeform	Mainly cold-deciduous shrublands or thickets o	, , , , , , , , , , , , , , , , , , ,	B. GLANDII OSA / CAREX ROSTRATA DA	BETULA OCCIDENTALIS DECIDUOUS	B. OCCIDENTALIS CT	B. OCCIDENTALIS/POTENTILLA FRUTICOSA PA	CER	C. LEDIFOLIUS/AGROPYRON SPICATUM	C. LEDIFOLIUS/FESTUCA IDAHOENSIS PA CORNUS STOLONIFERA DECIDIONE SCRIPS	ONIFERA CT	CRATAEGUS DOUGLASII DECIDUOUS SCRUB SERIES		CRATAEGUS SUCCULENTA DECIDUOUS SCRUB SERIES	ss C. douglas		ELEAGNUS COMMUTATA DECIDUOUS SCRUB SERIES		. COMMUTATA/AGROPYRON SMITH	E. COMMUTATA/AGROPYRON DASYSTACHYUM CT	POTENTILLA FRUTICOSA DECIDUOUS SCRUB SERIES	POTENTILLA FRUTICOSA/CAREX SPP. CT	TOS	AMERICANA DECIDUOUS S	CIDUOUS SCRUB	VIRGINIANA CT	S	US SCR	TRILOBATA DECIDUOUS	TRILOBATA/AGROPYRON SPIC	ROSA WOODSII DECIDOOUS SCRUB SERIES D WOODSII OT		
UNESCO	Code			C3B4AFA///	C3B4AFABA0	C3B4AGA///	C3B4AGAAM0	C3B4AGABA0	C3B4AHA///	C3B4AHABA0	C3B4AHABMO C3B4AJA///	C3B4AJABA0	C3B4AKA///	C3B4AKABA0	C3B4ALA///	C3B4ALABA0	********	C3B4AMA///	C3B4AMABA0	C3B4AMACA0	22232323	C3B4ANA///	C3B4ANABA0	C3B4ANACA0	C3B4APA///	C3B4AQA///	C3B4AQABA0	C3B4AQM///	C3B4ARA///	C3B4ARM///	C3B4AKMBA0	() (C C C C C C C C C	.C3B4ATM///	

Resource Area Codes: GR=Garnet, DL=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River Occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence H, hypothesized to occur; __, no sample record, unlikely to occur based on environmental parameters

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Association Name form of decreasing cally within lifeform	lands or thickets	OUS SCRUB SERIES	SCRUB	eciduous	TIB SEDIES)	A PA SCRUB SERIES	SERIES		B SEKIES RUB SERIES	CANADENSIS PA	PA SPITOSA PA	CT (now just SALGEY	CRUB SERIES	A' [SEKIES DENSIS PA		now just SALLUT c.t. SERTES	S PA	TOSA PA	
t Community or by UNESCO life then alphabeti	Mainly cold-deciduous shrubland Lemperate regions (cont.) SHEPHERDIA ARGENTEA CT	ALBUS	SYMPHORICARPOS OCCIDENTALIS CT VACCINIUM OCCIDENTALE DECIDUOUS	Temperate region, mainly cold-d or thickets of alluvial position	SPP. SERIES BERBTANA ALLINITAL SCRIP	BEBBIANA CT	CANDIDA/CAKEA KOSIKATA PA DRUMMONDIANA ALLUVIAL SCRUB	DRUMMONDIANA PA EXIGUA ALLUVIAL SCRUB SER	EXIGUA CT	FARRIAE ALLOVIAL SCRUB S. GEYERIANA ALLOVIAL SCRUB	GEYERIANA/CALAMAGROSTIS CANADENSIS	GEYEKLANA/CAREX ROSTRATA PA GEYERIANA/DESCHAMPSIA CESPITOSA PA	GEYERIANA/POA PRATENSIS CT (now just	SALIX PLANIFOLIA ALLUVIAL SCRUB	S. PLANIFOLIA/CAREX AQUATILIS PA	LUTEA/CALAMAGROSTIS CANADENSIS	LUTEA/CAREX ROSTRATA PA	LUTEA/POA PRATENSIS CT (now just IX WOLFII ALLUVIAL SCRUB SFRTES	SALIX WOLFII/CAREX AQUATILIS PA	S. WOLFIL/DESCHAMPSIA CESPITOSA SPIRABA DOUGLASII CT	
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State/Global Plant Communities/Associations Ranking for Bureau of Land Management

	Minimum # plots	08	0 4 2 2		60	03		10+01			03	12		04			11	04	, o 40	0.5
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Ranking S G	't	2 2	# M		W	4	£ 4				۳ ۳	M.		า		ر. ر. د. ر	m (C· 4		
Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform)	Extremely xeromorphic (subdesert) sh semi-deciduous shrubs CHDVSCOMUNMANTS NATIONOLIS YEDIS CONTRA	CHRYSOTHAMUS NAUSEOSUS AERIC S ARTEMISIA TRIDENTATA-ATRIDIN TRY	ARTEMISIA TRIDENTATA-ATRIPLEX N Extremely xeromorphic (subdeser		O A. CONFERTIFOLIA PA // SARCOBATUS VERMICULATUS XERIC SCRUB SERIES	S. VERMICULATUS/AGROPYRON SPICA	\circ	 თ თ	Mainly evergreen, dwarf-scrub and related dwarf-shrubland communities		0 \	O KALMIA MICROPHYLLA/CAREX SCOPULORUM PA	/ PHYLLODOCE SPP. EVERGREEN DWARF SCRUB SERIES O P EMDETRIFODMIS/ANTENNADIA/IANATA CT		JUNIPERUS	JUNIPERUS HORIZONTALIS/AGROPYRON DASYSTACHYUM JUNIPERUS HORIZONTALIS/AGROPYRON SDICATUM CT	JUNIPERUS HORIZONTALIS/ANDROPOGON SCOPARIUS	JUNIPERUS	JUNIPERUS	O CERATOLDES LANATA/STIPA COMATA PA
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	ation Name f decreasing within lifeform)	reen cespitose CRUB SERTES	H (∩	SCRUB SERTES	EPTOSEPALA ergreen to	shrubland F SCRUB SERTES	UTTALLII CT		INESCENS CT UTTALLIANA CT	I N DX	ት FA (same as ARTR/AINU 3 PA	CT (peren. grass	ຸໝ	ind lac	SCRUB SERIH	rass steppes		LIA CT	FOLIA PA	L.		K K	COPARIUS PA	HW-Hoadwot
	Community or Associa by UNESCO lifeform of then alphabetically w	b i 0	SEMI-DWARF SHRUB SE	OUOUS DWARF	/CALTHA LE mainly eve	ert dwart-sh KERIC DWARF	z		ATRIPLEX NUTTALLII-ARTEMISIA SPINESCENS C ATRIPLEX NUTTALLII/MONOLEPSIS NUTTALLIANA	N SMITHII CT		NUTTALLII/SPOROBOLUS AIROIDES C	ERIOGONUM PAUCIFLORUM XERIC DWARF	dwarf-shrubland	XERIC DWARF	tall-g		YUCCA GLAUCA/CALAMOVILFA LONGIFOLIA RHIIS APOMATICA TALI STEDDE SEDIES	RHUS AROMATICA/CALAMOVILFA LONGIFOLIA	is, tall-gr) (Ω C	ນ	DI.=Dillon
	ط ہد	Mainly cold-deciduous and ever dwarf-shrub thicket SALIX ARCTICA DECIDUOUS DWARF	S. ARCTICA/POLYGONUM BISTORTOID SALIX GLAUCA SEMI-DWARF SHRUB S	SALIX GLAUCA CT SALIX RETICULATA DECIDUOUS DWAR	S. RETICULATA(nivalis)/CALTHA L. Extremely xeromorphic mainly ev	semi-deciduous subdesert dwart- ARTEMISIA PEDATIFIDA XERIC DWAR	ARTEMISIA PEDATIFIDA-ATRIPLEX ATRIPLEX NUTTALLII XERIC DWARF	ATRIPLEX NUTTALLII PA	ATRIPLEX NUTTALLII-ARTEMISIA SP ATRIPLEX NUTTALLII/MONOLEPSIS N	NUTTALLII/AGROPYRON SMITHII NUTTALIIII/ABTHEMISIA TEITHEM	I/ORYZOPSI	II/SPOROBOLI	AUCIFLORUM	subdesert,	CENS	Terrestrial, herbaceous,	A TALL STEPPE	GLAUCA/CALAMOVILFA	ICA/CALAMO	Terrestrial, herbaceous, tall-gr	mostly lacking woody plants	GEKARDII TALL-GRASS Gebarrii/amedonogom		Area Codes: GR=Garnet. DL=Dillor
	Plant (arranged k stature, t	Mainly cold-deciduo dwarf-shrub thicket SALIX ARCTICA DECID	S. ARCTICA/PO SALIX GLAUCA	SALIX GLAUCA CT SALIX RETICULATA	S. RETICULA Extremely >	semi-decidi ARTEMISIA I	ARTEMISIA I ATRIPLEX NI	ATRIPLEX NU	ATRIPLEX NU ATRIPLEX NU	A. NUTTALLI		A. NUTTALLI A. MITTALLI	\vdash	Deciduous	AKTEMISIA SPINES A. SPINESCENS PA	Terrestrial	YUCCA GLAUCA	YUCCA GLAUC PHIIS APOMAT	RHUS AROMAT	Terrestrial	mostly lack	ANDROPOGON GERARDII	ANDROPOGOIN	Area Codes:
	UNESCO Code	C4B4BAA///	C4B4BAAAC0 C4B4BBB///	C4B4BBBAB0 C4B4BEE///	C4B4BEEAB0	C4C2ABA///	C4C1BBAABO C4C1BBA///			C4C1BBABMO		**********			C4CZACA/// C4CZACABA0			CSCIBBABAO	_			CSBICBA///	COBICDADAO	. Resource A

^{**}Resource Area Codes: GR=Garnet, DL=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River **Occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; __, no sample record and unlikely to occur based on environmental parameters

State/Global Plant Communities/Associations Ranking for Bureau of Land Management MONTANA NATURAL HERITAGE PROGRAM

Minimum # plots

UNESCO	Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform)	Ranking S G	Butte	BLM District Lewistown Resource Area	Miles City
	0.5		*GR DL HW	GF HV JD PH VY	BS BD PR
CSB1CBACA0 CSB1CBADA0 CSB1CCA///	ANDROPOGON GERARDII/CALAMOVILFA LONGIFOLIA PA A. GERARDII/FESTUCA IDAHOENSIS PA ANDROPOGON HALLIT TALL.GRASS STEEDE SEDIES	22			S H S
C5B1CCABA0	T		-	1	
C5B1CCACAO	TA CT MAIL CANAGO COMPANY	ე ო ე ო	1 1		E H
C5B1CDABA0	CANADENSIS	4	 0 0		
CSB1CEA///	CALAMOVILFA LONGIFOLIA TALL-GRASS STEPPE SERIES			ן ן ן	1
C5B1CEABA0 C5B1CEABM0	C. LONGIFOLIA/AGROPYRON SMITHII PA C. LONGIFOLIA/ANDROPOGON HALLIT DA		1 1		<u>P</u>
C5B1CEACA0	C. LONGIFOLIA/CAREX FILIFOLIA PA	U a Ta	 		16
CSB1CEADAO	C. LONGIFOLIA/C. HELIOPHILA PA	n m		ା ପ ୨ ସେ ସେ	ታ ታ ល ນ ល
CSB1CEB///			1		
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CSBICGA///	ALAKIS ARUNDI		-		1
CSB1CGABA0	P. ARUNDINACEA CT	4 4	ا ای		
CSB1CGMBA0 CSB1CHA///	HR PA	2 3		S S S	
C5B1CHABMO	S. PECTINATA PA			S S S S	 (3) (3)
C5B1CHACA0	S. PECTINATA/SCIRPUS PUNGENS CT	თ ო ო ო	1 1		တ (
/// * # # # # # # # # # # # # # # # # #	ous, mid-grass steppe	Ω	1		ທຸ
CSBZBBA///	MID-GRASS ST				
C5B2BBACA0	A. ARBUSCULA/AGRUPIRON SPICATION PA	3,4 4,5	M		W
C5B2BCA///	'EMISIA CANA MID-GRASS STEPPE	ر م			
C5B2BCAAM0	. CANA/CAREX HELIOPHILA PA	3			
CSBZBCABA0	A. CANA/FESTUCA IDAHOENSIS PA		S P)
	A. CANA/SIIPA COMATA PA	c C			

Resource Area Codes: GR=Garnet, DL=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River Occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; __, no sample record, unlikely to occur based on environmental parameters

State/Global Plant Communities/Associations Ranking for Bureau of Land Management

UNESCO Plant Community or Association Name Code (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform)	Ranking S G	Butte	BLM District Lewistown	Miles City
herbaceous, mid-gras		*GR DL HW	~	BS BD PR.
shrubs (cont.) 5B2BDA/// ARTEMISIA LONGILOBA MI				
AO ARTEMISIA LONGILOBA/FESTU		<u> </u> @	1	
CSB2BEABAO A NOVA/AGRODVRON SDICATTM DA	Z			N
5B2BEACAO A. NOVA/FESTUCA IDAHOFNSTS) လ (1	ט ו ו ג
ARTEMISIA PEDATIFIDA MID-GR	•		1 1 1	1
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C5B2BFABMO A. PEDATIFIDA/AGROPYRON SPICATUM PA C5B2BGA/// ARTEMISIA TRIDENTATA MID-GBASS STEDDE SEDIES	2 4	d		
A. TRIDENTATA/FESTUCA IDAHOENSIS PA	4 ռ	[0]	Ισ	
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ARTEMISIA TRIPARTITA/FESTUCA IDAHOENSIS PA		P S H		
A. TRIPARTITA/FESTUCA SCABRELLA PA	2 2		1 1 1 1	1 1
GUITEKKEZIA SAKOTHKAE MID-GRASS STEPPE				1
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POTENTILLA FRUTICOSA MID-GRA	ζ,	1	1 1	-
P. FRUTICOSA/FESTUCA IDAHOENSIS PA	, T	ľ	ΙÞ	1
P. FRUTICOSA/F. SCABRELLA PA		i ii	υ α η α 	<u>ر</u>
PURSHIA TRIDENTATA MID-G	1	4	4	1
P. TRIDENTATA/AGROPYRON SPICATUM	£.	IΗ	<u>d</u>	
TRIDENTATA/FESTUCA IDAHOENSIS	3	S S		-
CSB2BMA/// RHUS AROMATICA MID-GRASS STRUDG SPETES	3	н) 0	
RHUS AROMATICA/AGROPYRON SPICATITM DA	C	1		1
SB2BMABAO R. AROMATICA/ANDROPOGON SCOPARIUS		1		I¢
R. AROMATICA/CAREX FILIFOLIA PA				ጊ ር
DAO R. AROMATICA/FESTUCA IDAHOENS) M	-	N 미 미	ቷ t ታ t
5B2BNA/// SARCOBATUS VERMICULATUS MID-GRASS		 ໝ	4 4	ч
G LIHLIMS NO		H P S	S P S S	S
7/ IOCCA GLAUCA MID-GRASS STEPPE ST		1		
DADFABAU	4			

Resource Area Codes: GR=Garnet, DL=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River Occurrence Rating: S, documented as sampled in BCD or literature, P, high expectation of occurrence, H, hypothesized to occur; m, no sample record and unlikely to occur based on environmental parameters

Butte Lewistown Miles C Resource Area	GK DL HW GF HV JD PH VY BS BD PR 2		 	от С С С С С С С С С С С С С С С С С С С		מ	4 W	S	ı			ъ S S S Б Б Б Б В S S S В В S S S В В S S S S	1			1 	a s s s s s	W	ω ω	 	S S S	H S S	SSSPPH		א מ		2
Ranking g S G form)	lacking shrub	4.	4.	4 4		4 M	4	4	m (V	4	3	4,	4, ռ			m (LES	4	4,5		4	4,	S	m	ν)	ŗ	1
Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform)	Terrestrial, herbaceous, mid-grass steppe AGROPYRON DASYSTACHYUM/PHACELIA HASTATA PA AGROPYRON SMITHII MID-GRASS STEPPE SERIES	AGROPYRON SMITHII PA		A. SMITHII/STIPA VIRIDULA P	AGROPYRON SPICATUM MID-GRA A. SPICATUM-A. SMITHTI PA	A. SPICATUM-BOUTELOUA C	A. SPICATUM-B. GRACILIS PA	1 4	A. SPICATUM/ERIOGONUM OVAL	Þ	A. SPICATUM-MUHLENBERGIA CU		AGROSTIS STOLONIFERA CT	ANDROPOGON SCOPARIUS	A. SCOPARIUS-CAREX FILIFOLIA PA		DESCHAMPSIA CESPITOSA MID-GRASS STEPPE SER	D. CESPITOSA PA	O D. CESPITOSA/CAREX SPP. PA	/ FESTUCA IDAHOENSIS MID-GRASS STE	F. IDAHOENSIS/AGROPYRON C	F. IDAHOENSIS/A. SMIT	F. IDAHOENSIS/A. SPICATUM PA	O F. IDAHOENSIS/CAREX HELIOPHILA PA	FESTUCA SCARRELLA MID-GRASS STEDD	O F. SCABRELLA DA (remove - not skeposted)	
UNESCO Code	C5B2CAMBA0 C5B2CBA///	C5B2CBABAO	C5B2CBADA0	C5B2CBAEA0	CSB2CCA/// CSB2CCACAO	CSB2CCADA0	C5B2CCAEA0	CSBACCAFF	C5B2CCAGA0	C5B2CCAH	CSB2CCAHMO	CSBSCCARAO	CSB2CCMBA0	CSB2CDA//,	C5B2CDABA0	C5B2CDADA0	CSB2CFA//	C5B2CFAAM0	CSB2CFABA0	CSB2CGA//	CSBZCGABAO	CSBZCGACAU	CSB2CGADAO	CSBACGAEAO	C5B2CHA//	CSB2CHABA	

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Control constitution of the con-	e/Global Plant Communities/Associations Ranking for Bureau of Land Management
A 1-N or form property on form	Plant
	State/Global
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UNESCO	Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform)	Ranking S G	Butte	M District istown source Area	Miles City
	Terrestrial, herbaceous mid-grass steppe lacking woody plants (cont.)		GR DL HW	GF НV JD РН VY	BS BD PR
CSB2CHACAO CSB2CHACAO	FESTUCA SCABRELLA/AGROPYRON SPICATUM PA F. SCABRELLA/FESTUCA IDAHORNSIS DA	4-7-4	다.	д ⁽	
C5B2CJA///	GLYCERIA BOREALIS MID-G		a a	ار ا ا	1
CSB2CKA///		3 3		S	
C5B2CKABA0	oub. info.	2		 	1
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CSB2CLM///	POA PRATENSIS	1 1	ן מי	N	თ
C5B2CLMBA0		5	W	(c)	0 0
C5B2CNA///	SPOROBOLUS CRYPTANDRUS		!)	נ
C5B2CMABAU		2 3			S
22222222			1	ω 	F 1
C5B2CMABA0	S. COMATA-BOUTELOUA GRA	ار الا	0 0 	ן מי מי מי מין	
C5B2CMACA0	S. COMATA-CAREX FILIFOLIA PA			מ	מר מר בייני
C5B2CMADA0	S. COMATA-C. HELIOPHILA		1		ታ ር
C5B2CMB///	STIPA CURTISETA MID-GRASS STEPPE SERIES		1		Ц
CSBZCMBBB0	S. CURTISETA-STIPA VIRIDULA CT (DEVEL)	32. 23.	 	ן מינט מינט	
	herbaceous		 		! !
	(no examples thereof)				
	lerrestrial, nerbaceous short-grass steppe lacking wood, nlack				
C5B3CBA///	BOUTELOUA GRACILIS SHORT-GRASS STRDDF SPDIFS				
CSB3CCA///	E SERIES		!!!	1 1 1	
	bastures or related gra		1		1
	mat				
C5C2ABA///	SPP. ALPINE MEADO				
C5C2ABABA0	ROSSII CT	4	S P	 	
/ / ないないいい	CARBA BLINGIDES ALFINE "MEADOW" SERIES		ı	I	
CSCSACABAO	C. ELINOIDES CI T. RIVANOIDES APETA DOSSIT OF		ъ С		I I I I
C5C2C1AFA0	HITTER CECT FORCE FOR SEX NIGHTLAND OF	4 4	je	ļ) I
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**Resource Area Codes: GR=Garnet, DL=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River 6 Occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; __, no sample record and unlikely to occur based on environmental parameters

State/Global Plant Communities/Associations Ranking for Bureau of Land Management MONTANA NATURAL HERITAGE PROGRAM

Miles City	BS BD PR H H H T T T T T T T T T T T T T T T T			
BLM District ewistown Resource Area	YY HQ CU			
BLM Dist Lewistown Resource	GF HV H H H H			IOH用
Butt	S DL HW S S S S S S S P P P P S P P S P P S P P S P P S P P S P P S P P S P P P S P P P S P P P P S P			
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Ranking S G	E 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		4a p	7 U4K
Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform)	Meadows, pastures or related grasslands above treeline, closed alpine mat (cont.) CAREX RUPRESTRIS/POTENTILLA OVINA CT CAREX SCIRPOIDEA/GEUM ROSSII CT CAREX SCIRPOIDEA/POTENTILLA DIVERSIFOLIA CT DESCHAMPSIA CESPITOSA/CALTHA LEPTOSEPALA CT DESCHAMPSIA CESPITOSA/POTENTILLA DIVERSIFOLIA		/ Meadows, pastures or related grasslands above treeline, closed alpine mat (cont.) BACO LEUCOPOA KINGII PA (MTTALHP CAPPUBLING) BAGO L. KINGII/OXYTROPIS CAMPESTRIS CT A/// POLYGONUM BISTORTOIDES ALPINE MEADOW SERIES A/// SILENE ACAULIS ALPINE MEADOW SERIES ABAO SILENE ACAULIS MAT-CUSHION PLANT PA AL// XEROPHYLLUM TENAX ALPINE MEADOW SERIES Alpine (or subnivian) mat-patches	DRYAS INTEGRIFOLIA ALPINE DRYAS INTEGRIFOLIA/CAREX S DRYAS OCTOPETALA ALPINE ME D. OCTOPETALA/CAREX SPP. P D. OCTOPETALA/CAREX RUPEST D. OCTOPETALA/CAREX RUPEST D. OCTOPETALA/POLYGONUM VI
UNESCO Code	CSC2A1AGA0 CSC2A1AJA0 CSC2A1AJGO CSC2A1ABA0 CSC2A1ABA0	CSCZADABAO CSCZADABAO CSCZADACAO CSCZADADAO CSCZADABAO CSCZADABAO CSCZCIAACO CSCZCIAACO	C5C2B1BAC0 C5C2B1BAG0 C5C2AFA/// C5C2AGABA0 C5C2AGABA0	C5C2BBA/// C5C2BBABA0 C5C2BCA/// C5C2BCABA0 C5C2B3ABL0 C5C2A3ABS0

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UNESCO Code (a)	Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform)	Ranking S G	ing G	В	Butte	Lev	BLM District Lewistown		ict		Miles (lity	
Tal	sedge (and gramin		*	GR D	DL HW	GF.	kesource F HV JD P	urce A JD PH	Area H VY	n BS	BD	PR	
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//	CAREX FLAVA SWAMP SERIES	ŋ	η'	1	1	I	ì	1	1	1	1	1	
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	ELEOCHARIS PALUSTRIS SWAMP SERIES	į)	1	1	1	1	1	1	1	1	l	
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Resource Area Codes: GR=Garnet, DL=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River Cocurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; ___, no sample record and unlikely to occur based on environmental parameters

BLM District Butte Lewistown Miles City Resource Area	*GR DL HW GF HV JD PH VY BS BD PR				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
Ranking S G		ω' ω'	4 4 4 4	4	The state of the s	4 · (ma	4 4	٠٠٠ ر : : : د٠٠ ر		2
UNESCO Plant Community or Association Name Code (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform)	Low-sedge (and graminoid) swamp with low or short-term flooding C5D1BBA/// CAREX SAXATILIS SWAMP SERIES	O CAREX SAXATILIS PA / CAREX SCOPULORUM SWAMP	C5D1BCABAO CAREX SCOPULORUM PA ????????? C. SCOPULORUM/CALTHA LEPTOSEPALA CT C5D1BDA/// ELEOCHARIS PAUCIFIORA SWAMP SERIFS	ELEOCHARIS PAUCIFIORA PA Herbaceous and half-woody sa	O SALICORNIA RUBRA CT Inland salt meadows	/ DISTICHLIS SPICATA SALT MEAL D DISTICHLIS SPICATA PA AGROPYRON SMITHII-POA JUNCIF	EADOW SERIE vegetation	communities on organic deposits at fl / EQUISETUM FLUVIATILE FORB SERIES 0 EQUISETUM FLUVIATILE PA 0 GLYCYRRHIZA LEPIDOA CT	TYPHA LATIFOLIA FORB S TYPHA LATIFOLIA PA POLYGONIM AMPHIRIIM FC) POLYGONUM AMPHIBIUM CT

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State/Global Plant Communities/Associations Ranking for Bureau of Land Management

Miles City BS BD PR	M 				
LM District Wistown Resource Area HV JD PH VY		[0,			ω
Butte Lev FR DL HW GF					
Ranking S G G examples)	3 3 3 1? 1?	4 4 N		CJ	
Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifeform) Desert and other scarcely vegetated areas Scarcely vegetated rocks and screes (see below) Scarcely vegetated rocks (no examples) Chasmophytic vegetation (rooting in fissures, no Alpine rock series (no examples) Scarcely vegetated screes Lowland and submontane scarcely vegetated screes Lowland and submontane scarcely vegetated screes ARRENTSIA LONGIENTIA SCREETED THE STATESTA LONGIENTIA SCREETED THE SCREETED T	ARTEMISIA LONGIFICITA PA A. LONGIFICIA/CALAMOVILFA L A. LONGIFICIA/ORYZOPSIS HYM ARTEMISIA TRIDENTATA SCREE	A. TRIDENTATA-ATRIPLEX CONFER Montane vegetated scree forma ABIES LASIOCARPA MONTANE SCREABIES LASIOCARPA/SCREE PA		POPULUS TREMULOIDES MONTANE SCREE SERIES P. TREMULOIDES/PHYSOCARPUS MALVACEUS-AMELANCIER PSEUDOTSUGA MENZIESII MONTANE SCREE SERIES PSEUDOTSUGA MENZIESII/SCREE PA Aquatic formations: fresh water, temperate & subpolar types with rooting floating-leaves	POTAMOGETON SPP. AQU NUPHAR SPP. AQUATIC Aquatic formations: subpolar with free-f LEMNA MINOR AQUATIC
UNESCO Code COGE CGAZAAMBAO	C6A2ABABAO C6A2ABADAO C6A2ABACAO C6A2ACA///	C6A2ACABAO C6A2BBA/// C6A2BBABAO	C6A2BCABAO C6A2BCABAO C6A2BDABAO C6A2BBABAO C6A2BEABAO	C6A2BFA/// C6A2BFABA0 C6A2BGA/// C6A2BGABA0	C7C1BB???? C7C1BB????

Resource Area Codes: GR=Garnet, DL=Dillon, HW=Headwaters, GF=Great Falls, HV=Havre, JD=Judith, PH=Phillips, VY=Valley, BS=Billings, BD=Big Dry, PR=Powder River Occurrence Rating: S, documented as sampled in BCD or literature; P, high expectation of occurrence, H, hypothesized to occur; ___, no sample record and unlikely to occur based on environmental parameters

State/Global Plant Communities/Associations Ranking for Bureau of Land Management

BLM District Lewistown Miles City Resource Area	GF HV JD PH VY BS BD PR OTHER! S
e L	*GR DL HW GF HV OTHER!
Ranking S G cm)	OTHER!
Plant Community or Association Name (arranged by UNESCO lifeform of decreasing stature, then alphabetically within lifefo	OTHER! OTHER! B AGROPYRON SPICATUM-CALAMOVILFA LONGIFOLIA B AGROPYRON SPICATUM-POA CUSICKII PA B FESTUCA IDAHOENSIS-STIPA COMATA B FESTUCA SCABRELLA-DESCHAMPSIA CESPITOSA B FESTUCA SCABRELLA-STIPA COMATA B FESTUCA SCABRELLA-STIPA VIRIDULA CABRELLA-STIPA VIRIDULA B STIPA COMATA-PASCOPYRUM SMITHII COMATA-PASCOPYRUM SMITHII COMATA-CALAMOVILFA LONGIFOLIA COMATA-KOELERIA MACRANTHA B S. COMATA-KOELERIA MACRANTHA COMATA-CALAMOVILFA LONGIFOLIA COMATA-CALAMOVILFA COMATA-CALA
UNESCO	OTHER! CTGGAGSPEB CTGGAGSPOB CTGGFESCIB CTGGFESCMB CTGGFESCMB CTGGSTCOBB CTGGSTCOBB CTGGSTCOBB CTGGSTCORB CTGG

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